pathogenic; but certain strains, *e.g.*, the *E. coli* O157 strain, common in the intestines of cattle, has recently caused a number of deaths.

As used herein, "a disease or disorder caused by *E. coli* infection" refers to a disease or disorder caused by *E. coli* infection alone or in combination with other agents and/or conditions, whether inheritable and/or acquired.

As used herein, "an effective amount" of a compound for treating a particular disease is an amount that is sufficient to ameliorate, or in some manner reduce the symptoms associated with the disease. Such amount may be administered as a single dosage or may be administered according to a regimen, whereby it is effective. The amount may cure the disease but, typically, is administered in order to ameliorate the symptoms of the disease. Repeated administration may be required to achieve the desired amelioration of symptoms.

As used herein, "pharmaceutically acceptable salts, esters or other derivatives" include any salts, esters or derivatives that may be readily prepared by those of skill in this art using known methods for such derivatization and that produce compounds that may be administered to animals or humans without substantial toxic effects and that either are pharmaceutically active or are prodrugs.

As used herein, "treatment" means any manner in which the symptoms of a condition, disorder or disease are ameliorated or otherwise beneficially altered. Treatment also encompasses any pharmaceutical use of the compositions herein.

As used herein, "amelioration" of the symptoms of a particular disorder by administration of a particular pharmaceutical composition refers to any lessening, whether permanent or temporary, lasting or transient that can be attributed to or associated with administration of the composition.

As used herein, "substantially pure" means sufficiently homogeneous to appear free of readily detectable impurities as determined by standard methods of analysis, such as thin layer chromatography (TLC), gel electrophoresis and high performance liquid chromatography (HPLC), used by those of skill in the art to assess such purity, or sufficiently pure such that further purification would not detectably alter the physical and chemical properties, such as enzymatic and biological activities, of the substance. Methods for purification of the compounds to produce substantially chemically pure compounds are known to those of skill in the art. A substantially chemically pure

compound may, however, be a mixture of stereoisomers or isomers. In such instances, further purification might increase the specific activity of the compound.

As used herein, a "prodrug" is a compound that, upon *in vivo* administration, is metabolized or otherwise converted to the biologically, pharmaceutically or therapeutically active form of the compound. To produce a prodrug, the pharmaceutically active compound is modified such that the active compound will be regenerated by metabolic processes. The prodrug may be designed to alter the metabolic stability or the transport characteristics of a drug, to mask side effects or toxicity, to improve the flavor of a drug or to alter other characteristics or properties of a drug. By virtue of knowledge of pharmacodynamic processes and drug metabolism *in vivo*, those of skill in this art, once a pharmaceutically active compound is known, can design prodrugs of the compound (see, e.g., Nogrady (1985) Medicinal Chemistry A Biochemical Approach, Oxford University Press, New York, pages 388-392).

The term "substantially" identical or homologous or similar varies with the context as understood by those skilled in the relevant art and generally means at least 70%, preferably means at least 80%, more preferably at least 90%, and most preferably at least 95% identity.

As used herein, a "composition" refers to any mixture. It may be a solution, a suspension, liquid, powder, paste, aqueous, non-aqueous or any combination thereof.

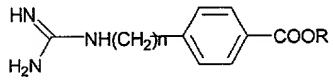
As used herein, a "combination" refers to any association between two or among more items.

As employed herein, the term "subject" embraces human as well as other animal species, such as, for example, canine, feline, bovine, porcine, rodent, and the like. It will be understood by the skilled practitioner that the subject is one appropriate to the desirability of treating or preventing diseases or disorders caused by or associated with certain bacterial infection, *e.g.*, *E. coli* or *H. pylori* infection.

As used herein, the abbreviations for any protective groups, amino acids and other compounds, are, unless indicated otherwise, in accord with their common usage, recognized abbreviations, or the IUPAC-IUB Commission on Biochemical Nomenclature (see, (1972) Biochem. 11:1726).

B. Anti-bacterial agents

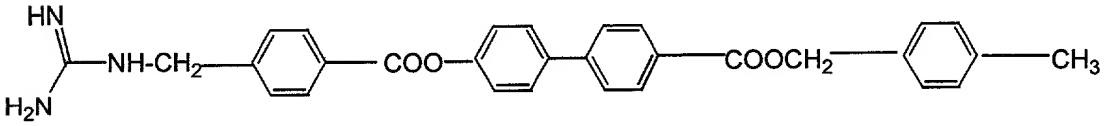
The present invention adds to the repertoire of anti-bacteria agents by providing drugs which would inhibit DNA replication initiation in certain bacteria. In one aspect, the present invention is directed to a compound, or a pharmaceutically acceptable salt thereof, having the following formula II:



wherein n is an integer from 0-1, and R is elected from the group consisting of hydrogen, a lower alkyl, *e.g.*, $C_{1\text{-}10}$ alkyl, a lower aryl, *e.g.*, $C_{1\text{-}10}$ aryl and

The lower alkyl can be any suitable aliphatic group including alkane, alkene, alkyne and cyclic aliphatic groups. The lower alkyl can be straight carbon-hydrogen groups or can comprise suitable substitutes, *e.g.*, halides. The lower aryl can also be straight carbon-hydrogen groups or can comprise suitable substitutes, *e.g.*, halides.

Preferably, the compound has the following formula III (NE-2001):



The R group can comprise aromatic groups or esters. Alternatively, the R group does not comprise any aromatic groups or esters.

The compounds of the present invention can be a particular stereoisomer, *e.g.*, R- or S- configuration, or a mixture thereof, *e.g.*, a racemic mixture. The term compounds contemplated herein encompasses all pharmaceutically active species of the compounds, or solutions thereof, or mixtures thereof. The compounds contemplated herein also encompass hydrated versions, such as aqueous solutions, hydrolyzed products or ionized products of these compounds; and these compounds may contain different number of attached water molecules.